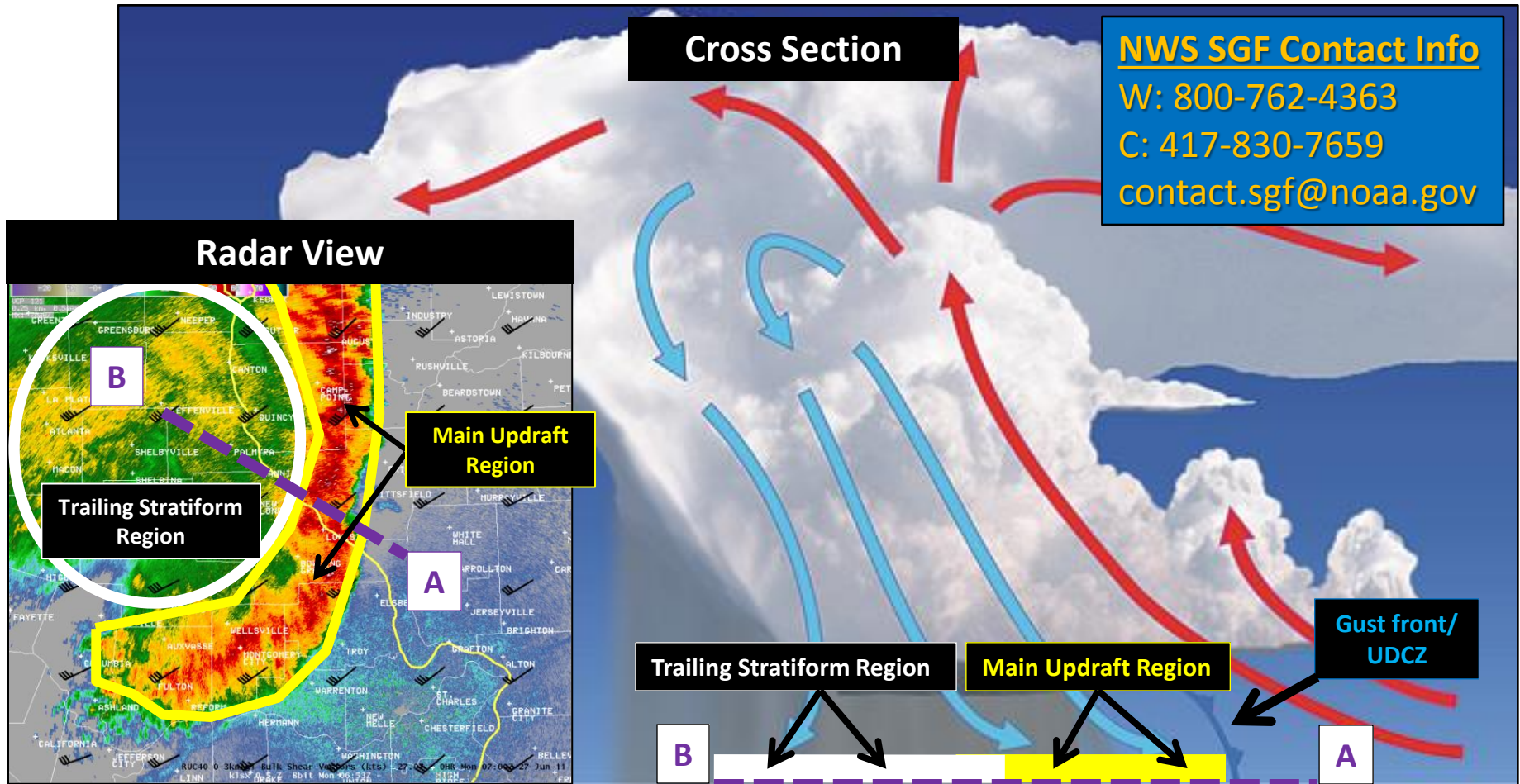


Typical Squall Line Structure



Trailing Stratiform Region

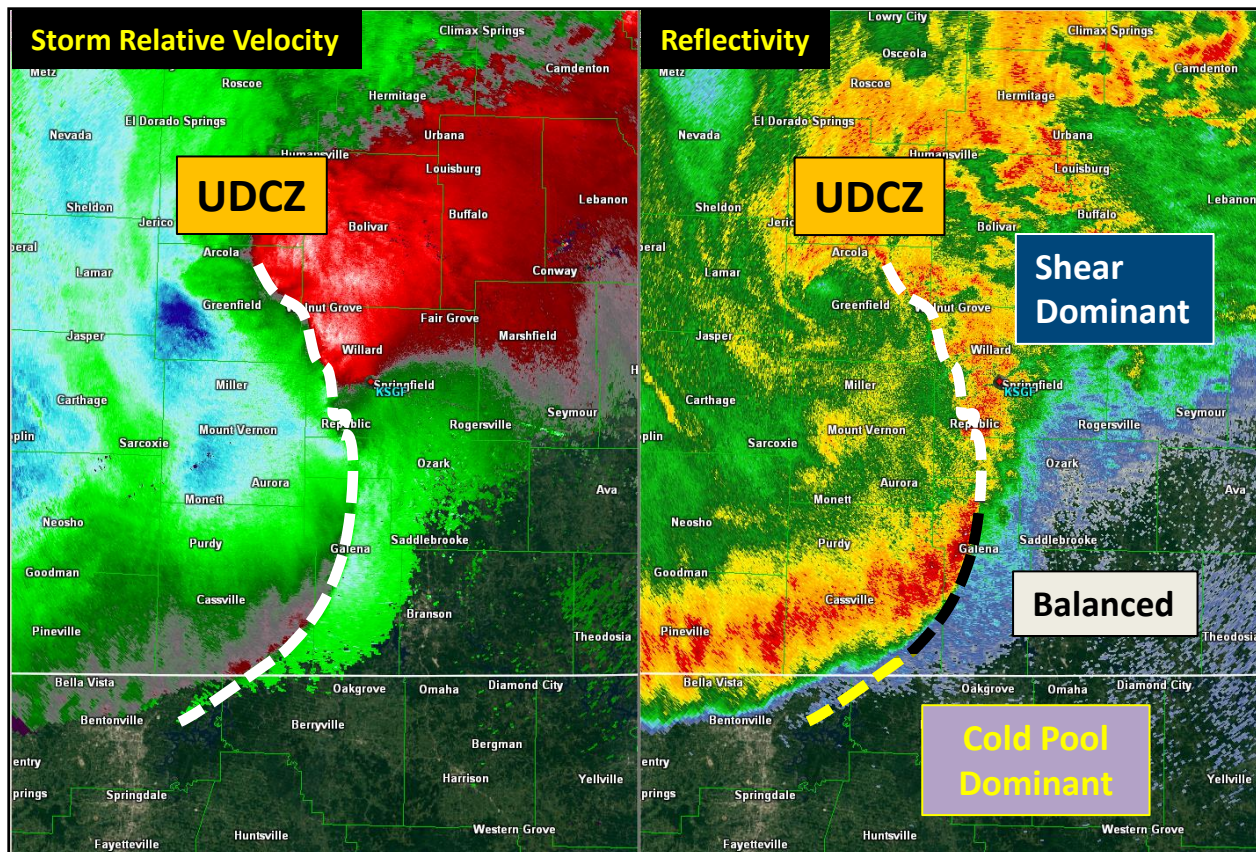
1. Light to moderate precipitation
2. Little chance for severe weather
3. Still contains lightning

Main Updraft Region

1. Heaviest precipitation
2. Greatest chance for severe weather
3. Contains most lightning

Determining Potential Squall Line Threats

1. Locate the Updraft Downdraft Convergence Zone (UDCZ) using radar velocity products
2. Compare location of UDCZ to updraft region in radar reflectivity product:
 - Shear Dominant – UDCZ within or behind updraft region
 - Balanced – UDCZ on immediate front edge of updraft region
 - Cold Pool Dominant – UDCZ out ahead of updraft region



Shear Dominant

- Damaging straight-line winds
- Tornadoes

Balanced

- Damaging straight-line winds
- Tornadoes
- Hail

Cold Pool Dominant

- Damaging straight-line winds
- Flash Flooding (training)

Descending Rear Inflow Jet/Reflectivity Drop

Watch trailing stratiform region behind main updrafts

Reflectivity drop region!

Line Break

Watch southern tip of reflectivity pendant behind line break for tornado threat!

Front Reflectivity Nub

Tight/Strong Mesovortex ($V_r \geq 25$ kt)

Enhancing Surge/Bow

Signs of Enhancing Surge/Bow

1. Acceleration
2. Growing larger
3. Pivoting (usually cyclonically)

Paired Front/Rear Inflow Notch

Boundary Ingestion

Most Ideal

1. Stationary or quasi-stationary boundary
2. Boundary perpendicular to bow

Outflow Boundary

Bow Ingesting Boundary

UDCZ Entry Point

Watch areas near and north of entry point!

Contracting Bookend Vortex with $V_r \geq 25$ kt

Bookend Vortex

Tornadic Debris Signature (TDS)

0.5° Z

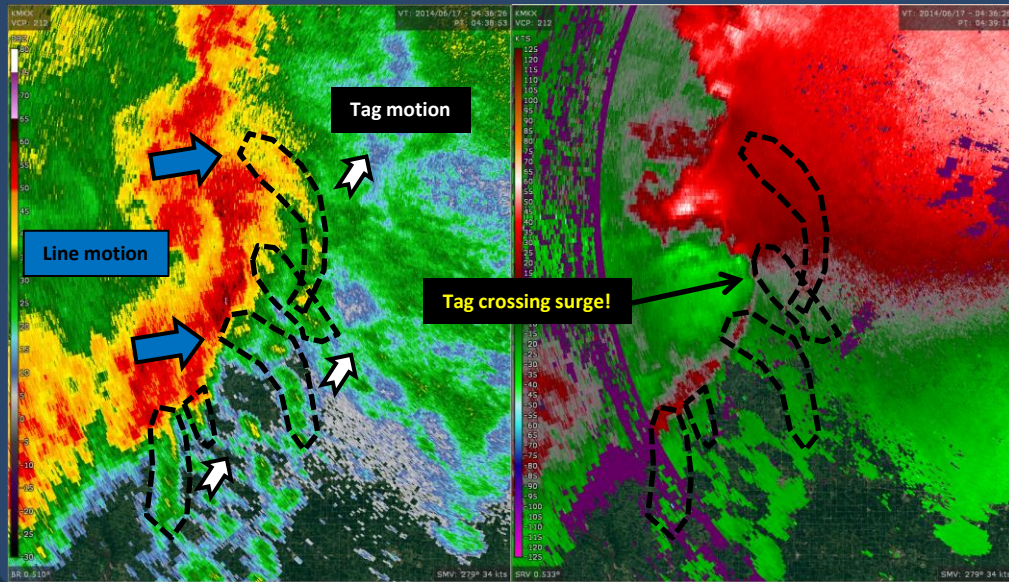
0.5° SRM

0.5° CC

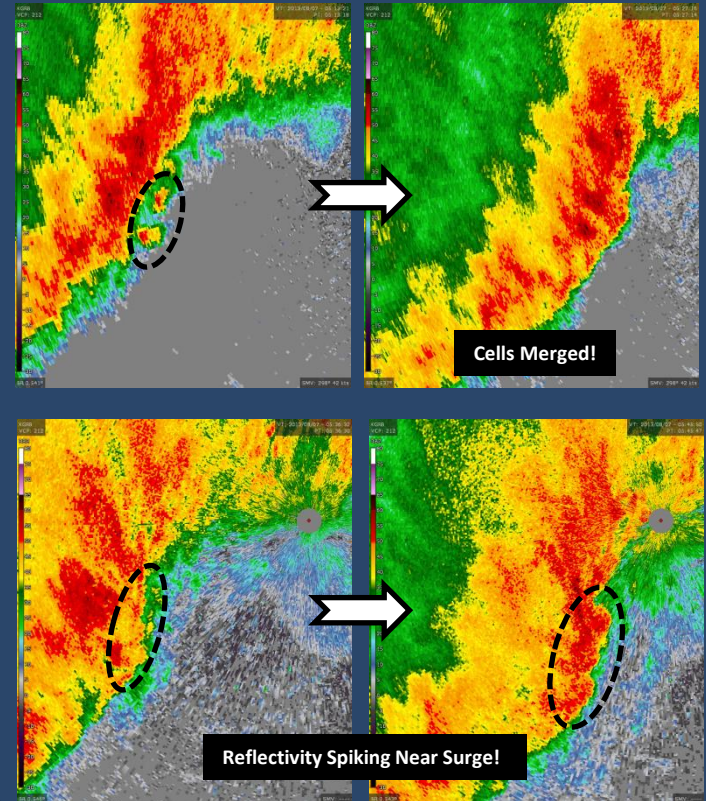
0.5° ZDR

Tornado Warning Confidence Builders

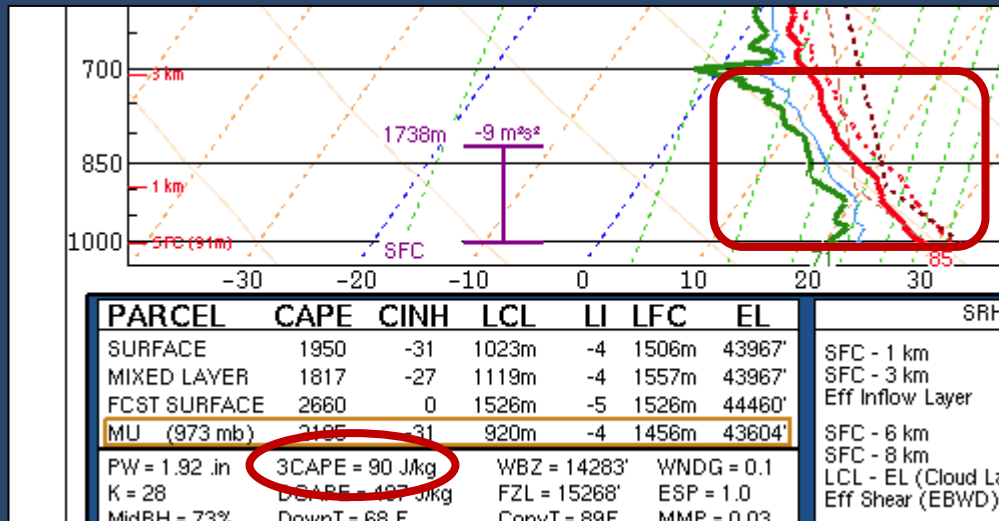
Reflectivity Tag Intersecting a Surge



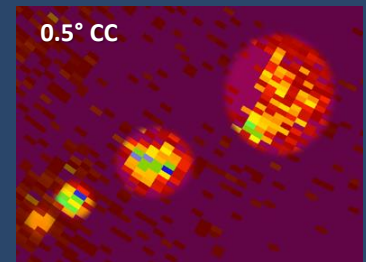
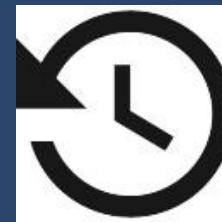
Cell Merger/Reflectivity Spiking Near Surge



0-3 km MLCAPE ≥ 40 J/kg



History of Tornadoes (Includes prior TDSs)



Tornado Warning Nudgers